## Space Weather Forecast

Issued on Sunday, 05 June 2022 at 13:21 Local

**This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales**

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**Space Weather Forecast Headline: Chance of G1-G2/Minor to Moderate Storm intervals late Day 1 or Day 2 (5th-6th) from possible CME arrival(s).**

**Analysis of Space Weather Activity over past 24 hours**

**Solar Activity:** Solar activity has been Very Low during the past 24 hours. There are five numbered sunspot regions presently on the visible disc. A sixth region did develop in the northeast quadrant for a time but has subsequently faded. All regions currently on the disc are small and simple and have shown no significant signs of development. No other Earth-directed Coronal Mass Ejections (CMEs) were observed in the last 24 hours.

**Solar Wind / Geomagnetic Activity:** The solar wind has been at background levels through the period, and largely below 300 km/s. The total interplanetary magnetic field strength has been weak, with only weak variations in the north-south component. Geomagnetic activity was Quiet (Kp 0-2).

**Energetic Particles / Solar Radiation:** The count rate of solar energetic particles (high energy protons) remained at background with no solar radiation storms observed.

**Four-Day Space Weather Forecast Summary**

**Solar Activity:** Solar activity is expected to be Low to Very Low, with a chance of Common-class flares.

**Solar Wind / Geomagnetic Activity:** There are three potentially Earth-directed CMEs, although all are low confidence. The first two are from filament eruptions that occurred on the 1st and 2nd, and are expected to pass late on day 1 or early day 2 (5th or 6th). The first is very weak, but more Earth-directed, with the second slightly faster but likely to give only a glancing impact. However these could also potentially combine to give a single arrival. The third, is the filament eruption from the 4th, and is expected to miss, but with a low chance of glancing impact late on day 3 (7th) or early day 4 (8th). Otherwise no other solar wind enhancements are indicated, with mainly background winds expected. Geomagnetic activity is forecast to be predominately Quiet, but increasing to Unsettled to Active should any CME arrivals occur. These will also give a chance of isolated G1-G2 Minor to Moderate storms.

**Energetic Particles / Solar Radiation:** The count rate of solar energetic particles (high energy protons) is forecast to remain at background with no solar radiation storms occurring.

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**Geomagnetic Storms:**

| Geo-Magnetic Storm Probability (Exceedance) | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Minor or Moderate | G1 to G2 | No | 20 | 30 | 5 | 5 |
| Strong | G3 | No | 1 | 1 | 1 | 1 |
| Severe | G4 | No | 1 | 1 | 1 | 1 |
| Extreme | G5 | No | 1 | 1 | 1 | 1 |

**Radio Blackouts - X Ray Flares:**

| X Ray Flares Probability | Level | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | R1-R2 M Class | No | 5 | 5 | 2 | 5 |
| Very Active | R3 to R5 X | No | 1 | 1 | 1 | 1 |

**Solar Radiation Storms - (High Energy Protons):**

| Radiation Storms Probability (Exceedance) | Level ($cm^{-2}$ $sr^{-1}$ $s^{-1}$) | Past 24 Hours (Yes/No) | Day 1 (00-24 UTC) (%) | Day 2 (00-24 UTC) (%) | Day 3 (00-24 UTC) (%) | Day 4 (00-24 UTC) (%) |
|---|---|---|---|---|---|---|
| Active | ≥ S1 | No | 1 | 1 | 1 | 1 |
| Very Active | ≥ S3 * | No | 1 | 1 | 1 | 1 |

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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